

GNSS Initiatives in the Asia Pacific Region

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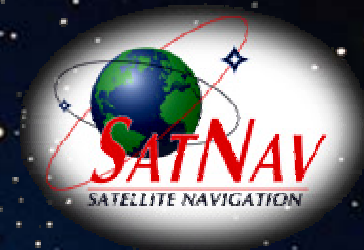
Asia Pacific Region



- **Work to harmonize the ICAO Global Plan and ICAO ATM Operational Concept (2002) and Support Asia and Pacific Regional Planning bodies to incorporate the new technologies**
- **Encourage Regional Development and Implementation of Satellite Navigation to Promote Safety, Efficiency, and Standardization**
- **Promote system harmonization efforts to support a safe, secure and efficient global and regional CNS/ATM system**
- **Ensure compatibility and interoperability of new global technologies**
- **Provide aviation technical support within multi-lateral global initiatives and programs**



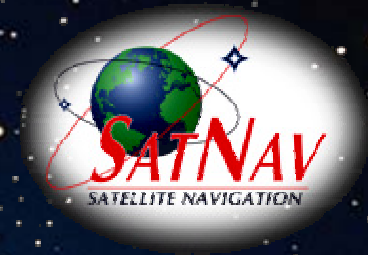
Asia Pacific Initiatives



- **Asia Pacific Economic Cooperation (APEC)**
 - Participate with APEC Economies to regionally approve GPS as a supplemental navigational aid
 - Support GNSS Implementation Conferences and Workshops in the Region to provide education and operational guidance
 - Share our experiences with member economies so they can better transition to satellite navigation, including efforts to establish a regional test bed



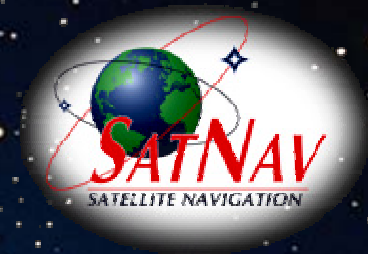
APEC GNSS Regional Meeting Results (cont)



- **Meeting attendees reiterated commitment to implementation of satellite navigation within the region**
- **Japan offered assistance to economies to fund regional test bed**
- **Japan offered MSAS TestBed Master Station and ENRI to process data as its contribution**

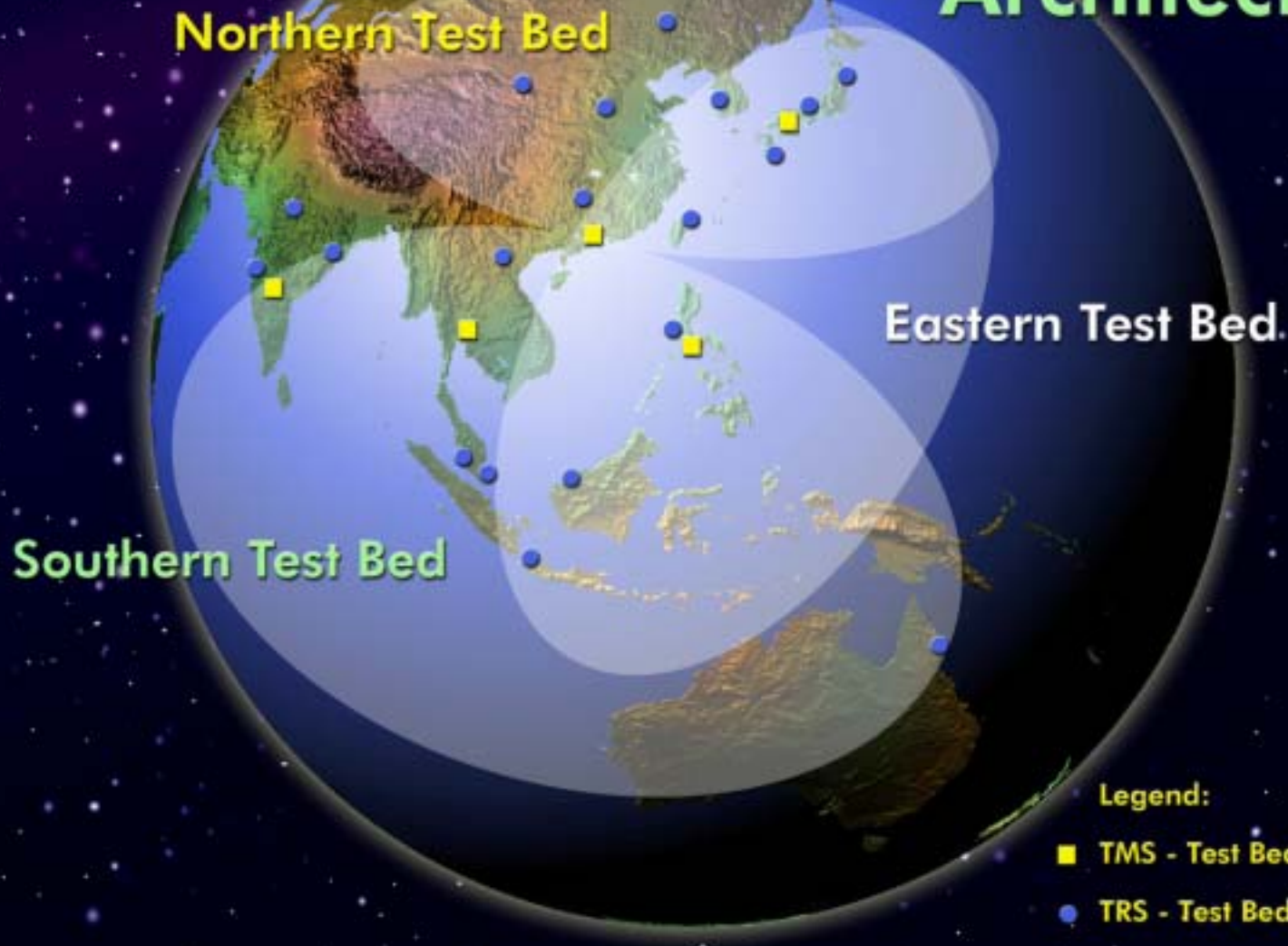


APEC GNSS Regional Meeting Results



- **Most States clearly showed interest in satellite navigation**
- **Philippines stated intent to purchase TRS**
- **FedEx (Subic Bay Operations) intent to purchase a LAAS prototype**
- **First meeting of the GNSS Implementation Team (GIT) was scheduled for February 26-March 1, 2002**

Sample Test Bed Architecture





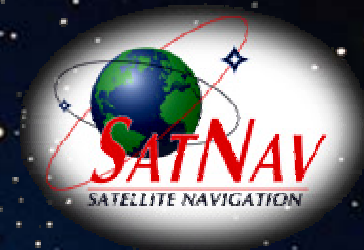
GIT/1 Meeting



- **GIT/1 Meeting held Feb. 26-Mar 1, 2002 in Los Angeles**
 - **Hosted by Raytheon and Boeing**
- **Established the GNSS Implementation Team from member economies interested in a regional test bed**
- **Meeting resulted in defining:**
 - **GIT goals and objectives**
 - **GIT Terms of Reference**
 - **GIT Work Program**
- **Australia will Host the next GIT in September 2002**



GIT Goals & Objectives



- **Expedite the implementation of GNSS in all economies**
- **Advance the development of an Asia Pacific Approach to GNSS implementation to encourage cooperation that will enhance safety and efficiency**
- **Seek from all economies the expertise to ensure the success of GNSS implementation**
- **Cooperate with non-APEC economies as necessary to provide for seamless implementation of GNSS**



GIT Terms of Reference



- **Investigate the feasibility of multimodal Global Navigation Satellite System (GNSS) implementation, which will provide early operational and financial benefits to all modes of transportation in the APEC region.**
- **Identify measures to facilitate GNSS implementation in the Asia Pacific Economic Cooperation (APEC) region within the framework of a regional approach**
- **Complementing the work of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO).**



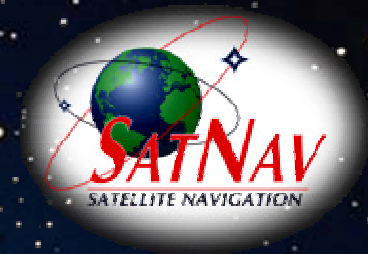
GIT Terms of Reference (cont)



- Develop and implement a GNSS work program aimed at enhancing the safety, security, capacity, and efficiency of transportation in the APEC region through cooperative and environmentally sound multimodal efforts.
- Provide a public/industry forum to address GNSS related issues that will benefit the APEC region (including non-APEC economies) by providing a regional approach within a global framework to a safe, secure, efficient, and financially sound multimodal transportation system.



GIT Work Program



- **Facilitate an incremental approach for use of GNSS systems for multimodal transportation as validated by cost benefit analysis of Satellite Navigation & Communications system components.**
- **Assist economies to implement GNSS as a supplemental and/or primary means of air navigation.**
- **Assist economies to implement test reference stations to encourage data collection and analysis and share those results.**



GIT Work Program (cont)



- **Provide an analysis on the current status of GNSS across all transportation modes and determine opportunities to utilize GNSS technology.**
- **Encourage the shared use of GNSS facilities and services wherever economically and operationally beneficial.**
- **Promote collaborative research projects, education, and information exchange in all areas related to evolving GNSS technologies.**



Current GPS Applications - Aviation -



- Significant Safety-of-Life Benefit to Aviation
 - Affordable, Accurate Approach and Landing Capability
- Used by Over 42 Countries*
- Seamless, All Weather Navigation
 - Enhances Operational Safety, Increases Revenues, and Reduces Operating Costs
 - Search & Rescue Operations for Downed Aircraft



Civil GPS Use

Power Grid
Interfaces



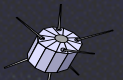
Personal Navigation



Trucking &
Shipping



Satellite Ops
and Timing



Surveying &
Mapping



Communications --
Network
Synchronization
and Timing



Aviation



Recreation



Railroads



Fishing &
Boating



Off shore
Drilling





APEC Joint Ministerial Statement



Meeting results endorsed at the APEC TPT-20 meeting in Manila, Philippines, March 4-8, 2002

**3rd APEC Ministerial Meeting, May 6-9, 2002
Lima Peru**

- The 21 Ministers of Transportation endorsed the Joint Ministerial Statement during the APEC Ministerial
- This Joint Statement *provides the overall recognition, endorsement, and approval of the work initiatives that the Transportation Working Groups are doing within the next year including the efforts of the GIT.*



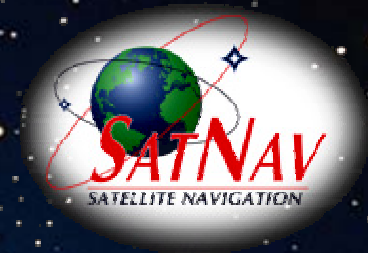
ICAO and other States India



- **India GNSS Planning and Implementation**
 - Support U.S. Trade Development Agency (TDA) in establishing a work project for a GNSS architecture and design study (using India as a regional model)
 - Support India's efforts to begin transition to satellite navigation
 - Support additional regional activities to establish a GNSS test bed
- **GPS Technical Workshop, Bangalore, India (April 22-26, 2002)**
 - FAA and Industry SBAS Experts Provided Technical Instruction in 5-day workshop GNSS geared towards engineers and scientists from India.
 - Over 120 technical experts and industry engineers that participated from all over India.



ICAO and other States India (cont)



- **GNSS Seminar and Conference, New Delhi (April 29-30, 2002)**
 - **FAA and U.S. Industry provided high-level overview of SBAS and GBAS, benefits, application to Indian Ministers and high level decision makers**
- **Article in April 30, 2002 Economic Times, “*India to have space-based air navigation by '07*” states India’s intent to transition to satellite navigation**



ICAO and other States Japan



U.S. and Japan Cooperative Efforts

- Continued WAAS/MSAS Interoperability will allow for seamless transition of aircraft over Pacific routes and support ICAO's GNSS initiative
- Both countries Participate in Satellite Based Augmentation System (SBAS) Technical Interoperability Working Group (IWG) with Europe and Canada
- Data Sharing by WAAS and MSAS Reference Stations for more seamless transition between service areas
- Potential for GEO cooperation and cost savings



Upcoming Activities

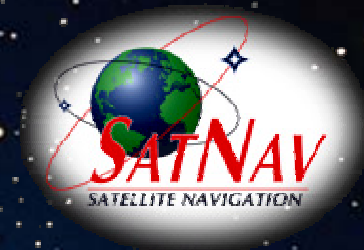


- **ICAO APANPIRG**
Bangkok, Thailand **Sept. 9-13**
- **GIT/2 Meeting**
Brisbane, Australia **Sept. 18-20**
- **APEC TPTWG 21 Meeting**
Brisbane, Australia **Sept. 23-27**
- **10th APEC Economic Leaders Meeting**
Cancun, Mexico **Oct. 6-9**
- **ICAO 39th DGCA**
Manila, Philippines **Oct. 14-18**



CNS/ATM

Additional Information



For additional information on CNS/ATM technologies and U.S. implementation programs, please visit the following websites:

FAA

<http://www.faa.gov>

Communications, Navigation, and Surveillance

<http://www.faa.gov/and/andhome.htm>

CNS International Initiatives

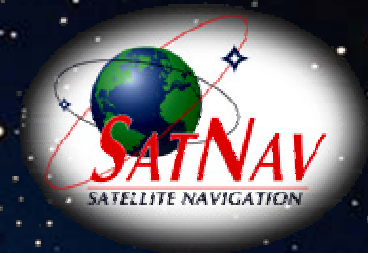
<http://www.faa.gov/asd/international/index.htm>

U.S. NAS Architecture

<http://www.faa.gov/nasarchitecture/nasarch.htm>



Asia Pacific Region



Thank you !